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Description of a new species of *GRAPTA*, and Notes on *G. interrogationis*.

BY J. A. LINTNER.

Grapta umbrosa, n. sp.

Primaries.—Anterior margin moderately curved toward the tip, similar to *comma*. Tip never falcated, as in *interrogationis*. Posterior and interior margins less excavated than in *interrogationis*. Above fulvous; basal region deeper; disc not so red as in the other *Graptas*. Fringe white in ♂, except at tips of nervules, where it is brown; in ♀, white in some of the interspaces, and brown interspersed with white in others. Posterior border, with a narrow submarginal band of fulvous, preceded by a connected series of dark brown crescents rather obscurely defined. The row of triangular spots anterior to these, a shade lighter than the disc, with the two next the tip, edged before with black. The seven discal spots are of a less glossy black than in *interrogationis*.

Secondaries.—Tail straight, short, not exceeding three-fourths the length of that of *interrogationis*, which it equals in breadth; length in ♂, one-half greater than in ♀. Above, the disc is purplish black, shading into dark fulvous at the base and at the interior margin. The black spot between the subcostal nervules is not so conspicuous as those of the primaries; that between it and the costal nerve, indistinct or wholly wanting; that lying partly within the discoidal cell and extending over the lower nervule of the submedian (which spot is oblong and quite distinct in *interrogationis*) is small, sometimes geminate, or reduced to a simple dot; in lieu of the conspicuous triangular black spot at the bifurcation of the submedian in *interrogationis*, is an obscure shade resting on the upper nervule and above it, and extending nearly to the subcostal nervule. The submarginal row of red crescents which characterizes *interrogationis*, is here obsolete or limited to three rounded spots at the most between the nervules of the subcostal. Tail and tips of nervules with lilac scales; in *interrogationis* the entire hind margin is bordered with lilac.

Beneath in *interrogationis*, a marked feature is the series of yellow or whitish spots of the primaries, usually eleven in number, nearly square, placed on the basal third of the marginal nervure, joining which and extending to the costal nervure are groups of darker colored yellow scales irregular in outline, but grouped opposite to the above costal spots. In this species, the costal spots are fewer in number, smaller, elongated, occupy but the basal fourth of the costa, and are not so conspicuous as to be a prominent feature; the contiguous yellow scales are not grouped,

but are reticulated with the brown of the alternations of the costal spots. Both wings in the ♂ are beautifully and distinctly variegated with light and dark brown; on superiors, a costo-subapical violet shade, and inner margin of inferiors glossed with violet. The ♀, of a duller brown, and less variegated with dark brown on the basal half; the superiors faintly glossed with violet, the inferiors conspicuously so. A submarginal series of crescents of violet colored scales, forms in the ♂ a connected band except at the apex, in the ♀ an interrupted one. Before and parallel to this in the ♂, the inferiors have a dark brown band extending from the anal to nearly the anterior angle, contracted centrally and at its extremities. Within this band, between the nervules, is a row of rounded spots of lighter brown, pupilled with black; these spots, but without the enclosing band, are better defined and more distinctly pupillated on the primaries. In the ♀, instead of the dark band on the inferiors, there is simply an interruption of the violet shading, in which space are the rounded pupillated spots; on the superiors, the spots are obsolete, but the pupils distinct; in *interrogationis* ♀, these pupillated spots do not appear. The silver discal character is similar in outline to that of *interrogationis* but more delicate, its upper portion being sometimes divided in two parts. Palpi above, dotted with a few light fulvous scales, barely visible without a lens. Expanse of wings, ♂ 2.25, ♀ 2.50 inches. Described from four ♂, nine ♀.

It is not a little singular that this species should for so long a time, have escaped detection, but the probable reason may be found in its comparatively rare occurrence preventing the bringing together of sufficient numbers to show the constancy of its characteristic features. Its marked difference of color has long been known, and had lent to it in ordinary reference, the designation of "the black variety." Harris in 1841 in his Report on the Insects of Massachusetts, refers to it in his description of *interrogationis* thus: "hind wings in the male most often black above, except at the base, and sometimes of this color in the other sex also." The occurrence of both sexes, afforded sufficient evidence of its not being a sexual variety, which it was thought by many to be, and its association with *interrogationis* in New England, New York and elsewhere, proved it not to be a casual result of local influences. It does not appear to have been particularly described even as a variety. The figures of *interrogationis* of Cramer and of Sm.-Abb., represent the posterior half of the secondaries black merging into dark fulvous, but these are probably only exaggerations of coloring, for the outline of the wings in both cases, is that of *interrogationis*. Were

they faithful representations, they would indicate a passing of the one style of coloration into the other, which intermediate grades have never come under our observation.

In addition to the black wings of *umbrosa*, there are the marked differences of color as compared with the species from which we separate it, of the duller shade of the anteriors as above described, and a less degree of blackness of the spots. There is also a translucency of the wings, which usually permits the silver character of the under surface to be seen from above. This translucency is very noticeable when the insect is held between the eye and the light, when, also, the obsoleteness of the spots of the inferiors is favorably shown, in the almost immaculate appearance of the wings.

But if these differences are of questionable specific importance, conclusive evidence of the distinctness of our two species is afforded in the shape of the wings, viz., in the curve of the costo-apical margin of the primaries, in the degree of excavation of their posterior and interior margins and in the length of the tails. Placed side by side, these features will at once strike the eye, and so marked and constant are they, that from comparison of outline alone, the species can be determined. There is also a difference in their sizes,—the expanse of *interrogationis* being in the ♂ 2.50, ♀ 2.75 inches, which exceeds *umbrosa* by .25 inch.

Additional confirmation of the validity of this species, may be found in the circumstances under which it first was brought to my observation. During the first week of July 1861, there were brought to me at Schoharie, fourteen larvæ and chrysalides taken from or very near a garden hop-vine, which, from the casual notice given them, were presumed to be those of *interrogationis*. The larvæ were mature, and in a day or two entered their pupal state. The imagines emerging in about twelve days, proved, to my surprise, to be every one of the "black variety"—three males and eleven females. About the middle of July, several other seemingly identical larvæ were taken by me from hop-vines, which emerging the last of the month, gave the ordinary *interrogationis*. Impressed with a belief in the specific difference of the "black variety" I endeavored to ascertain its larva, and to this end, collected on Aug. 10th two chrysalides, and twenty larvæ varying from one half-inch in length to nearly full size. During the ensuing two weeks many additional larvæ were taken by me from hop yards, and grouped in four breeding cages, in accordance with colorational differences which were observed and noted. Of these differences, in lieu of copying at length the notes then taken, it may suffice at the present to state that they

presented the following gradations: head ranging from red to a glossy black; spines of the head, from red at base and black above with white annulations to the branches, to wholly black; spines of extremities, from black below and red above, to wholly red; dorsal spines, from red banded with white, and black tipped, to entirely red; lateral rows of spines, from pale red almost white, to ferruginous; body with pustulations from white to rufous; linings of body, from well defined and continuous stripes, to lines simply indicated by interrupted markings.

After their transformation to the pupal state, several of the above were found to have fallen victims to their natural enemy *Pteromalus caesusæ* Harris. From four chrysalides especially observed, above one hundred of these parasites emerged from each, a few words respecting which,—in illustration of the remarkable development of the sexual instinct with which we are so frequently presented in the insect world—may not be out of place in this connexion. Escaping from their cocoons contained within the chrysalis one or more small holes were eaten by them, usually in the wing-cases, through which they came forth with fully expanded wings and in perfect condition, as rapidly as one could follow another. No sooner had a male made his exit, than he at once sought out and united with the opposite sex, quickly passing with vibrating wings and antennæ from one to another: and so extreme was the ardor impelling them to their unions, that several were observed intently watching at the holes through which their companions were to emerge, and instantly appropriating each female as she made her appearance.

As the result of the above larval collections, about one hundred and ten *interrogationis* were obtained, and not a single *umbrosa*. Some minor differences of shading were presented, but none sufficient to warrant classification in accordance with the previous larval grouping.

The pupa cases from which *umbrosa* emerged, were laid aside for future comparison, but when opened after the lapse of two or three years, they were found to be almost entirely powdered by the destructive *Aethrenus varius* Fab. Unless my recollection is much at fault, they were of a delicate purplish cast, quite in contrast with the ferruginous hue of *interrogationis*; and with several of the dorsal spines having a notable degree of transparency.

The observations above recorded, render it probable that the specimens of *umbrosa* obtained, were the progeny of one parent. We may also infer a close larval resemblance to *interrogationis*,* and also a pre-

*Mr. Edwards has obtained the larvæ in W. Virginia, and reared numbers of

cedence in the time of appearance of the summer brood of the former, of not less than two weeks. Its rarity is shown by the above collections made from different hop yards, as well as by the fact of its falling so very seldom in the hands of the collector. Besides the above specimens, but one other has ever been taken by me.

Since the preceding pages were written, it has been represented to me that *umbrosa* is identical with the *C. aureum* of Fabricius. A careful examination of the Fabrician descriptions of *C. aureum* and *interrogationis* has shown me that neither can be regarded as synonymous with *umbrosa*; they are as follows:

Papilio N. C-aureum.

Fab. Syst. Ent. (1775) p. 506, n. 266. P. N. P. alis dentato-caudatis, fulvis, nigro-maculatis; posticis subtus C-aureo notatis. Linn. Syst. Nat. ii, 777, 169.

Habitat in As a.

Fab. Spec. Ins. (1781) tom. 2, p. 94, n. 410. Mant. Ins. (1787) tom. 2, p. 50, n. 495.—P. N. P. alis dentato-caudatis... ..as in Syst. Ent.

Fab. Ent. Syst. em. (1793) tom. 3, pars 1, p. 78, n. 243. Description as in Syst. Ent., and in addition, quotation of Cramer Pap. ii, tab. 19, figs. E. F.

Papilio N. interrogationis.

Fab. Supp. Ent. Syst. (1798) tom. 5, p. 424, n. 243-4. P. N. alis caudatis fulvis, nigro maculatis; subtus glaucis; striga punctorum nigrorum, posticis C-aureo notatis. Habitat in America boreali. Nimis affinis P. C-aureo at paullo major et alie subtus glaucæ striga punctorum nigrorum.

From the citations by Fabricius of Linnæus and Cramer, it appears that his *C-aureum* was identical or supposed to be the same with the Asiatic species (Chinese, Cramer). This species according to Godart "resembles strongly *polychloros* on the upper side. The underside of its wings is obscure towards the base, yellowish towards the extremity, with a golden C, or rather silver, on the disc of the inferiors. The upper side of most of the females, presents between the middle and the posterior border, five bluish spots, of which three are on the superior wings and two on the inferiors." To this species are referable, *Papilio Angelica* Cramer, Papil. pl. 388, figs. G, H, and *Papilio Angelica* Herbst, Papil. tab. 150, figs. 3, 4.

In elucidation of the error of Fabricius, Godart's description and synonymy of *interrogationis*, is herewith presented, from Encycl. Method. Herbst, (1819) tom. ix, p. 301, n. 15.

Vanessa P. interrogationis.

Van. alis anticis falcatis, suprâ fulvis, nigro maculatis; posticis extus subcaudatis, cœrulescenti-nigris, basi ferrugineâ; his subtus ? argenteo notatis.

the imago therefrom, during the month of June of the present year.

Papilio N. C-aureum, Fab. Syst. Entom. p. 506, n. 266.—Spec. Insect. tom. 2, p. 94, n. 410.—Mant. Ins. tom. 2, p. 50, n. 495.—Ent. Syst. em. tom. 3, pars 1, p. 78, n. 243 (Le Mâle).

Papilio N. interrogationis, Fab. Ent. Syst. em. tom. 5. Suppl. p. 424, n. 243-4 (La femelle).

Papilio C-aureum, Cramer, Pap. 2. pl. 19, figs. E, F.

Papilio C-aureum, Herbst, Pap. tab. 162, figs. 1, 2.

Papilio C-aureum, Smith-Abbot, The Nat. Hist. of the rarer Lepidop. Ins. of Georgia, vol. I, p. 21, tab. 11.

Fabricius has taken the male of this *Vanessa* for the *C-aureum* of Linnæus, and he has made of the female a separate species under the name of *Papilio interrogationis*.

It has between two, and two and a half inches of breadth. The upper surface of the superior wings is fulvous, with seven or eight unequal black spots, and the posterior border of an obscure brown. The upper surface of the secondaries is of a bluish-black, with the base ferruginous. The under surface of the male is of a wood gray (*gris-bois*) undulated and variegated with brown; the under surface of the female is brown and lightly glossed with whitish-green, especially on the secondaries, on which the disc presents in both sexes, a silver spot in form of an interrogation point or interrupted C. There is besides toward the posterior border of each wing, a row of black points. The body is black above, with some greenish hairs on the thorax; the antennæ are brown, with the anterior third of the club whitish and the rest black. From Virginia and the neighboring States.

The description in the above paragraph is applicable to *umbrosa*, and if unqualified, would lead us to refer it to that insect. The "*alis anticis falcatis*," however, forbids such a reference, and indicates its having been drawn from some *Grapta* which as yet has no place in our collections, or, as is more probable, from Abbot's figure of *C-aureum*, to which it suspiciously conforms, and which is not our *umbrosa*. In *C-aureum* of Abbot, the primaries are conspicuously falcated; in *umbrosa*, they are never falcated. The two differ otherwise materially in outline, and in the extent of the black shading of the posterior wings.

In the Supplement to vol. ix, Enc. Method., page 819, n. 15 (duplicata), Godart has amended his *interrogationis*, so that it conforms to the species as generally accepted at the present day. It is as follows:

***Vanessa P. interrogationis*.**

It has from two to two and a half inches breadth. The upper side of the wings is fulvous, with eight or nine unequal black spots on the superiors, and three on the inferiors. The outer margin, which is of a ferruginous more or less intense, with a transverse series of yellow spots, is bordered exteriorly with ash-blue.

The under side is of a blackish brown or dead leaf color, more or less shaded with gray violet, with a silver spot in form of an interrogation point or interrupted C on the disc of the inferiors. There is also toward the terminal border of the four wings, a transverse row of black points, in part sprinkled with bluish.

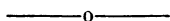
The female, ordinarily larger than the male, has the origin of the costa be-

neath yellow, reticulated with ferruginous. The prolongation of its secondaries is less, and the upper surface of the primaries has nine black spots. From North America.

Boisduval and Leconte in their *C-aureum*, describe the upper side of the inferiors as brown, or of an obscure ferruginous glossed with bluish green, with the base of a bright ferruginous. The outline of their figure approaches very nearly to that of *umbrosa*, but the representation of the inferiors differs widely from it, in that less than their inner half along the internal margin is shaded lightly with brown, while the rest of the wing is fulvous and distinctly spotted with black as in *interrogationis*. In their synonymy, they cite *C-aureum* of Cramer, of Fabricius in Ent. Syst., and of Smith-Abbot; the *interrogationis* of Godart (p. 301, n. 15,) and of Fabricius in Supp. Ent. Syst.

From the above it is evident that *umbrosa* is not the *C-aureum* of Fabricius, Smith and Abbot, Boisduval and LeConte, or the *interrogationis* of Godart, and is justly entitled to its indication as a new species.

New York State Cabinet of Natural History, May 1869.



Descriptions of two ACARIANS bred from the White Maple (*Acer dasycarpum*).

BY HENRY SHIMER, M. D.

VASATES, nov. gen.

Abdomen long, tapering to a point, with two long anal setæ. Legs four in number. Inhabits galls. Movement not rapid.

Vasates quadripedes, n. sp.—Body pale yellowish or yellowish-red, elongated to a point behind and terminated by two long slender hairs. Legs directed forward and quite at the anterior extremity, four in number, of the two posterior pairs, usually found in acarians, there is positively not the slightest trace, even in the most mature specimens; a few hairs are scattered over the legs, the foot appears to be 3-jointed, and is terminated by spines or hairs, tibiæ short. Length, .008—.005 inch.

Gall on the upper side of the leaf, by a small pedicel; form angular, wrinkled and pitted; at first green, but at length becoming reddish; the opening beneath is very small and surrounded with a little woolly down; size variable, say from one-twenty eighth to one-eighth of an inch in diameter.

For several years I have observed these galls in the early part of the summer. In the early spring as the leaves begin to expand from the bud, these galls, of very minute size, may be seen forming on the leaf. They appear first on the lower limbs and leaves next to the body of the tree, hence it appears probable that they pass the winter—perhaps in the egg-state—on the ground around the tree, and in early